

## **INFLUENCE OF TIDAL FORCES ON SOLAR-LIKE OSCILLATIONS OF RED GIANTS IN BINARY SYSTEMS**

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We propose to study the tidal effects that a stellar companion generates on solar-like oscillations of a red giant star in a binary system. The extremely high quality of Kepler data and the asteroseismic analysis techniques recently developed for these types of stars will allow the detection of tidally-modified frequencies for the first time. We will search for the influence of tidal forces as frequency shifts of the spectrum with respect to the unperturbed case, as well as variations of the frequencies with time over the orbital period, for a range of different binary systems. The observations will be modeled primarily using a 3D radiative hydrodynamic code (CO5BOLD) that can simulate the effects of tidal forces in pulsating star models. Synthetic data will be produced to compare to Kepler light curves and asteroseismic measurements. This project could open the door for exciting new studies of binary systems, well-known to be ubiquitous throughout the galaxy. It also takes advantage of the ultra high signal-to-noise of Kepler, necessary for detecting the small variations we expect. Since stars in binaries already provide estimates of a set of stellar parameters, our inferences will be well-constrained and provide unique insights into the effects that tidal forces have on stellar pulsations.